



Multiscale Systems, Inc.

Worcester, MA 01609

p | (781) 964-7911

e | admin@mss.science

w | www.mss.science

POC: Jesse Silverberg, PhD
CEO/Research Director
Multiscale Systems, Inc.
js@mss.science

RE: Multiscale Systems, Inc. receives NASA contract to develop advanced materials in Worcester, MA

DATE: June 27, 2019

Worcester, MA, June 27, 2019 – Multiscale Systems, Inc. has been awarded a [National Aeronautics and Space Administration \(NASA\)](#) Phase I [Small Business Innovation Research \(SBIR\)](#) contract for \$124,833 to conduct research and development (R&D) work on **Ultra Lightweight Mechanical Metamaterials for Mitigating Impacts and Crashes of Urban Air Mobility (UAM) Vehicles.**

Multiscale Systems, Inc. is an advanced materials firm specializing in the design and production of new materials for transportation, robotics, infrastructure, aerospace, and defense industries.

Multiscale Systems, Inc.'s mechanical metamaterial technology enables conventional materials to be enhanced without chemical or molecular modification, leading to materials that are significantly lighter, stronger, multi-functional, and failure-resistant. Products made with mechanical metamaterials are more energy-efficient and have longer service lifetimes, leading to cost savings and net-positive environmental impacts.

The aerospace industry generally benefits from stronger and lighter materials like those designed and produced by *Multiscale Systems, Inc.* While NASA advances its campaign to travel to the Moon and Mars, intermediate steps are necessary to achieve this broader vision. For example, the commercial drone market is often thought as a defense or hobby focused industry, but with drone delivery services taking off, drone-based transportation services in urban centers aren't far behind. Recognizing the potential hazard of drones crashing in urban centers, NASA is checking two boxes at once: develop materials to keep people safe in the event of a drone crash and ensure these materials are suitable for eventual space-based applications.

This innovation will result in notable advances for manufacturing. Conventional materials have well-established limitations and life times, and material scientists have thought that new chemistries or polymers were the most likely path toward innovation. However, the university-level basic research that uncovered the fundamentals of mechanical metamaterial technology showed unconventional opportunities were hiding right around the corner. By simply embedding geometric patterns into common materials, they become enhanced by the interaction between geometry and mechanics. The team at *Multiscale Systems, Inc.* has developed methods and software for designing these patterns, allowing them to find new patterns that meet industry-specific needs.

"NASA is very forward thinking," said Art Evans, PhD, Research Director at *Multiscale Systems, Inc.* "They see the emerging commercial market in UAM vehicles, or Jetsons-like flying cars if you prefer, as an opportunity to guide the eventual development of advanced materials for future space missions."



Once a small business is awarded a Phase I SBIR contract with NASA (up to \$125,000), it becomes eligible to apply for a Phase II contract (up to \$750,000). Small businesses with Phase II contracts are eligible to receive additional support through extended contract options and technology translation assistance.

NASA accepts Phase I proposals from small businesses annually. Small businesses with innovative science and technology solutions responsive to NASA's needs are encouraged to apply. All proposals submitted to the NASA SBIR/STTR program undergo a rigorous merit-based review process.

To learn more about the NASA SBIR program, visit: <https://sbir.gsfc.nasa.gov/>

For more information about NASA's Moon to Mars exploration plans, visit: <https://www.nasa.gov/moontomars>

For more information about NASA's investment in space technology, visit: <https://www.nasa.gov/spacetech>

To learn more about *Multiscale Systems, Inc.*, its team, and its technology, visit: <http://ww.mss.science>